

WHAT IS CLAIMED IS:

1. In a method of dispensing mercury into the light emitting chamber of a discharge lamp including the steps of providing the mercury in an amalgam, introducing the amalgam into a mercury dispensing chamber having fluid communication with the interior of the light emitting chamber, heating the amalgam to a temperature sufficient to effect release of the mercury from the amalgam into the light emitting chamber, sealing the mercury within the light emitting chamber, and removing the amalgamative metal and mercury dispensing chamber from the lamp, the improvement wherein the mercury is introduced into the mercury dispensing chamber in the form of one or more particles of an amalgam of one or more amalgamative metals.

2. The method of Claim 1 wherein the amalgamative metals include one or more metals from the group consisting of Zn, Pb, Sn, Cu, Cd, In, Bi, Ag, and Au.

3. The method of Claim 2 wherein the amalgamative metals include one or more metals from the group consisting of Bi, Sn, and Pb.

4. The method of Claim 1 wherein the one or more particles comprise Bi.

5. The method of Claim 1 wherein the one or more particles comprise more than about 0.5 weight percent mercury but not more than about 75 weight percent mercury.

6. The method of Claim 5 wherein the one or more particles comprise more than about 3.0 weight percent mercury but not more than about 40 weight percent

mercury.

7. The method of Claim 6 wherein the amalgamative metal comprises Bi.

8. The method of Claim 1 wherein the temperature of the particles is elevated to at least about 250°C to effect release of the mercury therefrom.

9. The method of Claim 1 wherein the temperature of the particles is elevated to a temperature greater than about 250°C but less than about 450°C to thereby effect release of the mercury therefrom.

10. The method of Claim 1 wherein each of the one or more particles is generally spherical.

11. The method of Claim 10 wherein the diameter of the generally spherical particles is at least about 50 µm but not greater than about 3000 µm.

12. The method of Claim 11 wherein the diameter of the generally spherical particles is at least about 150 µm but not greater than about 1200 µm.

13. The method of Claim 1 wherein the temperature of the particles is elevated about 400°C in about two minutes.

14. The method of Claim 13 wherein the temperature of the particles is held substantially constant for at least two minutes after being elevated.

15. In a method of dosing mercury into the light emitting chamber of a discharge lamp including the step of heating an amalgam retained outside of the chamber to thereby effect the release of mercury from the amalgam into the chamber with the

introduction of essentially no amalgamative metal into the chamber, the improvement wherein the amalgam is in the form of one or more particles.

16. The method of Claim 15 wherein the one or more particles include one or more amalgamative metals.

17. The method of Claim 16 wherein the amalgamative metals include one or more metals from the group consisting of Zn, Pb, Sn, Cu, Cd, In, Bi, Ag, and Au.

18. The method of Claim 17 wherein the amalgamative metals include one or more metals from the group consisting of Bi, Pb, and Sn.

19. The method of Claim 18 wherein the one or more particles include Bi and Sn.

20. The method of Claim 18 wherein the one or more particles include Pb.

21. The method of Claim 15 wherein the amalgam is retained in the exhaust tube of the lamp.

22. The method of Claim 15 wherein the amalgamative metal is no longer retained after the step of effecting the release of mercury from the amalgam.

23. The method of Claim 15 wherein the particles are generally spherical and generally uniform in size and composition.

24. In a method of dosing mercury into the light emitting chamber of a discharge lamp including the steps of providing an amalgam, retaining the amalgam exterior to the chamber, elevating the temperature of the amalgam to thereby effect the

release of mercury from the amalgam, providing passage for the released mercury into the chamber, and removing the dispensed amalgamative metal from the lamp, the improvement wherein the amalgam is in the form of one or more particles.

25. The method of Claim 24 wherein the one or more particles are retained in a mercury dispensing chamber in fluid communication with the light emitting chamber.

26. The method of Claim 25 wherein the mercury discharge chamber comprises a tubular section open at one end to the interior of the light emitting chamber and closed at the other end.

27. In a method of making a discharge lamp including the steps of positioning an amalgam in sufficient proximity to the light emitting chamber of the lamp so that mercury released from the amalgam will pass through an opening in the chamber wall into the interior of the chamber, heating certain parts of the lamp to temperatures greater than the temperature above which the amalgam will release mercury without releasing any mercury from the amalgam, and heating the amalgam to effect release of mercury, the improvement wherein the step of heating certain parts of the lamp is performed before the steps of positioning and heating the amalgam.

28. The method of Claim 27 wherein the amalgam is in the form of one or more particles of one or more amalgamative metals.

29. The method of Claim 28 wherein the step of positioning the amalgam comprises the step of introducing the one or more particles into a mercury dispensing

chamber in fluid communication with the light emitting chamber, and retaining the particles within the mercury dispensing chamber.

30. The method of Claim 29 wherein one end of the mercury dispensing chamber is open to the interior of the light emitting chamber, and the other end thereof is fused closed after the one or more particles are positioned therein.

31. The method of Claim 28 wherein the temperature of the particles is elevated about 400°C in about two minutes and then held substantially constant for at least two minutes.

32. The method of Claim 31 wherein the temperature of the particles is held substantially constant for at least seven minutes.

33. A method of making a discharge lamp comprising the steps of:

a. providing a lamp body forming a light emitting chamber in fluid communication with a mercury dosing chamber, the mercury dosing chamber being open to the light emitting chamber at one end and open to the atmosphere surrounding the lamp body at the other end;

b. introducing one or more particles into the mercury dosing chamber through the other end of the chamber, the particles being formed from mercury and one or more amalgamative metals;

c. sealing the other end of the mercury discharge chamber;

d. elevating the temperature of the one or more particles to effect release of

mercury from the particles into the light emitting chamber;

e. sealing the light emitting chamber to thereby contain the mercury released into the chamber; and

f. removing the mercury dosing chamber and residue of the particles from the lamp body.

34. A mercury dispenser for dispensing mercury into the light emitting chamber of a discharge lamp, said dispenser comprising a particle formed from an amalgam of one or more amalgamative metals, said particle being suitable for heating to effect release of mercury with essentially no release of amalgamative metal into the light emitting chamber of the lamp.

35. The mercury dispenser of Claim 34 wherein said one or more amalgamative metals include one or more metals from the group consisting of Zn, Pb, Sn, Cu, Cd, In, Bi, Ag, and Au.

36. The mercury dispenser of Claim 35 wherein said one or more amalgamative metals include one or more metals from the group consisting of Pb, Sn, and Bi.

37. The mercury dispenser of Claim 36 wherein said particle comprises Pb.

38. The mercury dispenser of Claim 36 wherein said particle comprises Bi and Sn.

39. The mercury dispenser of Claim 34 wherein the one or more particles

comprise more than about 0.5 weight percent mercury but not more than about 75 weight percent mercury.

40. The mercury dispenser of Claim 39 wherein the one or more particles comprise more than about 3.0 weight percent mercury but not more than about 40 weight percent mercury.

41. The mercury dispenser of Claim 34 wherein the temperature of the particle may be elevated to at least about 250°C to effect release of mercury without release of amalgamative metal.

42. The mercury dispenser of Claim 34 wherein the temperature of the particle may be elevated to at least about 400°C to effect release of mercury without release of amalgamative metal.

43. The mercury dispenser of Claim 34 comprising at least 0.1 mg mercury but no more than 10 mg mercury.

44. A discharge lamp comprising a light emitting chamber, a mercury dosing chamber in fluid communication with said light emitting chamber, and one or more particles comprising an amalgam of one or more amalgamative metals retained within said mercury dosing chamber, each of said particles being suitable for releasing essentially only mercury when the temperature of the particle is elevated to a predetermined temperature for a predetermined period of time.

45. The discharge lamp of Claim 44 wherein said particles comprise one or

more of the metals from the group consisting of Zn, Pb, Sn, Cu, Cd, In, Bi, Ag, and Au.

46. The discharge lamp of Claim 44 comprising a tubular passage between said mercury dosing chamber and said light emitting chamber, said passage being small enough to prevent passage of the particles from said mercury dosing chamber into said light emitting chamber.

47. The discharge lamp of Claim 44 wherein said chambers are formed from light transmissive material.

48. The discharge lamp of Claim 47 wherein said chambers are formed from glass.

49. The discharge lamp of Claim 47 wherein said chambers are formed from quartz or ceramic material.

50. The discharge lamp of Claim 44 wherein said one or more particles cumulatively include at least about 0.001 mg but not more than about 50 mg mercury.

51. The discharge lamp of Claim 50 wherein said one or more particles cumulatively include at least about 0.1 mg but not more than about 10 mg mercury.